NFC: Issues, lesson and future research

Vassilis Kostakos & Eamonn O’Neill
Overview

- Studies
- Arising issues & lessons
- Sample applications
Studies

- NFC Field trial
- NFC vs. 2D Barcodes (Lab)
- NFC vs. Bluetooth (In situ)
NFC vs. 2D Barcodes
NFC vs. Bluetooth
Issues

- Usability while NFCing (keypad, screen)
- Lights & vibration very useful
- Limited mobility
- Training can be very useful
- Social awkwardness
- Nature of place is important
Issues

- The 3220 Phone is limited!
- Series 40 - J2ME: No access to local files or camera
- Midlet Auto-launch: useful, but insecure (?)
- Binary SMS trigger
- Battery levels: Keep your phone charged
- Cannot truly emulate tag (?)
Lessons

- NFC & touch: yes! - but
  - Not alone in public
  - Yes for face-to-face
  - More engaging than Bluetooth
  - More efficient than 2D barcodes
  - Need to see better phones with NFC
Future research

- Multi-user NFC
- Touching others
- Being touched
Ongoing applications

- Phone book
- Tag-o-scope
- Photo sending
- Proxy attack / play with me
Tag-o-scope

Probe everyday things for hidden information

Children, gaming, messaging

Favourite items
Photo sending

People take 1000’s of photographs, but don’t share

Link everyday objects to people, trigger photo sending
Proxy attack
Play with me
Multi-user NFC
Users are connected wirelessly
Transmit “digital touch”
Ongoing apps

<table>
<thead>
<tr>
<th>Different</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same</td>
<td>Same</td>
</tr>
<tr>
<td>Space</td>
<td></td>
</tr>
<tr>
<td>Different</td>
<td></td>
</tr>
</tbody>
</table>

Tag-o-scope
Thank you

Vassilis Kostakos
vk @ cs. bath. ac. uk

http://www.cityware.org.uk